Applicant: Fumío Saitoh et al.

Serial No.: 10/627,353

Attorney's Docket No.: 14157-011001 / P1P2003102US

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REMARKS

Claims 1-16 are currently pending in this application. Applicants have amended claims 1, 4, 6, 10, 12 and 14 to particularly point out and distinctly claim the subject matter which they regard as their invention. Support for the amendments can be found throughout the specification, e.g., page 14, line 35 to page 15, line 8; and page 19, lines 4 to 9. No new matter has been introduced by the above amendments.

Reconsideration of the application, as amended, is respectfully requested in view of the following remarks:

The Examiner rejected claims 1-16 as being unpatentable over WO 93/06191, or further in view of EP 0990673. See the Office Action, page 2, lines 10-11.

Applicants have amended claim 1 to include the limitation, "such that the film has strong anisotropy." Amended claim 1 covers a film formed of a polybenzazole precursor, in which the film is produced by solidifying the polybenzazole precursor oriented in a given direction by a magnetic or electric field such that the film has strong anisotropy. The polybenzazole precursor having a repeating unit shown by the following chemical formula (1) or (2),

$$\begin{array}{c|cccc}
O & H \\
C & N & XH \\
Ar^{1} & & & \dots & (2)
\end{array}$$

$$\begin{array}{c|ccccc}
HX & N & C & Ar^{2} & & & \dots & (2)
\end{array}$$

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Wherein X is selected from a sulfur atom, an oxygen atom, and an imino group; Ar^1 and Ar^2 are selected from aromatic hydrocarbon groups; and n is an integer of 10 to 500.

WO 93/06191 discloses an in-plane biaxially oriented liquid crystalline polymer (LCP) molecules skewed out of the plane of orientation, by a magnetic or electric field, to reduce the dependence of the in-plane coefficient of thermal expansion (CTE) of the LCP components fabricated from biaxially oriented LCP components on an LCP composition. More specifically, WO 93/06191 discloses that the controlled biaxial orientation is skewed to about 2 to 88 degrees of normal to the plane of biaxial orientation. Thus, in WO 93/06191 the anisotropy of the LCP components are weakened by the application of the magnetic or electric field; indeed it teaches reducing the dependence of the in-plane CTE of the LCP components on an LCP composition. In other words, WO 93/06191 would teach a person of ordinary skill in the art to apply a magnetic or electric field to form a film that has weak anisotropy. In amended claim 1, the electric or magnetic field is applied to form a film that has strong anisotropy, contrary to the teaching of WO 93/06191. Thus, WO 93/06191 does not render amended claim 1 obvious.

Further, in amended claim 1, to form a film that has strong anisotropy, the controlled biaxial orientation is skewed to zero degree, or to a state where the controlled biaxial orientation corresponds to the direction of the film thickness. By contrast, WO 93/06191 discloses that the controlled biaxial orientation is skewed to about 2 to 88 degrees of normal to the plane of biaxial orientation, which does not suggest the controlled biaxial orientation in the direction of the film thickness. Applicants submit that WO 93/06191 does not render obvious amended claim 1 on this additional and independent ground.

Applicants have amended claims 4, 6, 10, 12, and 14 to include the limitation, "such that the film has strong anisotropy" or "the film to be formed has strong anisotropy," similar to amended claim 1. Thus, these claims are non-obvious over WO 93/06191 for the same reasons set forth above relating to amended claim 1. Claims 2, 3, 5, 7-9, 11, 13, 15 and 16 all depend directly or indirectly from claims 1, 4, 6, 10, 12 and 14, and are also not rendered obvious by WO 93/06191 for at least the same reasons.

EP 0990673 discloses the formulae of polybenzazole and a polybenzazole precursor, but does not disclose or even suggest controlling the orientation of polybenzazole or the

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polybenzazole precursor using an electric or magnetic field. Therefore, WO 93/06191 in combination with EP 0990673 also does not disclose or suggest amended claims 1, 4, 6, 10, 12 and 14, or claims 2, 3, 5, 7-9, 11, 13, 15 and 16 dependent therefrom.

CONCLUSION

Applicants respectfully submit that the grounds for rejection asserted by the Examiner have been overcome, and that claims 1-16 as pending define patentable subject matter.

Enclosed is a \$60 check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050, referencing Attorney's Docket No 14157-011001.

Respectfully submitted,

Date: 2-28-05

Y Rocky Tsao

Fish & Richardson P.C. 225 Franklin Street Boston, MA 02110-2804 Telephone: (617) 542-5070

Facsimile: (617) 542-8906

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